

The Sanitary Privy and Its Relation to Public Health

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IN the early part of the 20th century it was discovered that the prevention or control of typhoid fever, diarrhea, dysentery, hookworm, and other enteric diseases was dependent upon the sanitary disposal of human excreta. The facilities developed to break the chain of transmission of these diseases between the patient or carrier and the susceptible host were sewerage systems, septic tanks, and sanitary privies. In areas where sewers or septic tanks were impracticable, sanitary privies came to be recognized as essential facilities in the protection of the public health.

During the period 1910 to 1913, state boards of health became active in the control of hookworm. These agencies were assisted by the U. S. Public Health Service and volunteer health organizations. The Rockefeller Sanitary Commission, which was established in 1909 to combat hookworm disease, sponsored hookworm control programs in the South. Sanitation and infestation surveys made in 11 southern states confirmed the presence of hookworm disease in every one of the 700 counties investigated, and indicated that soil pollution was the chief factor in the spread of this disease. Programs for the control of hookworm disease followed these surveys. These programs involved free examination and treatment of patients, installation of sanitary privies, and promotion of their use. Emphasis was placed on the use

of sanitary privies as a means of protection against typhoid fever and dysentery as well as hookworm disease. Concurrently the Public Health Service carried on rural sanitation demonstration projects.

In 1914-1917, Dr. L. L. Lumsden of the Public Health Service and his coworkers made house-to-house sanitation surveys in 18 representative counties in 16 states, the work being financed by a federal appropriation. These rural sanitation enthusiasts convinced local authorities in West Virginia, Indiana, Washington, and other selected states that sanitary privies were a good investment. As a result, local funds were provided for employment of public health personnel whose major duty it was to see that throughout the community human excreta were disposed of in a sanitary manner. This rural sanitation activity provided the groundwork for organization of the early full-time county health units in the United States. Thus, the lowly privy may be considered a primary factor in the development of a movement of tremendous health significance to the nation as a whole.

The public health personnel with experience in the conduct of such rural sanitation projects served as the nucleus for the extra-cantonment sanitation program during World War I. There were at that time few well organized state and local health departments;

hence the Public Health Service assigned medical and sanitation personnel to the extra-cantonment zones. It was one of their duties to organize and direct local efforts toward obtaining safe water, safe milk, and, above all, sanitary disposal of human excreta. The construction of several thousand sanitary privies was a major part of this program. In addition to protecting the health of the armed forces and civilians in the war areas, perhaps the most significant result of this close coöperation between the Public Health Service and state health departments was the further stimulation of the development of full-time local health services.

During the interval between the first World War and the economic depression in the early 1930's, state health departments were strengthened, additional local health services were organized, and sanitary privy construction was carried on as an important function of these agencies. Plans, specifications, and regulations governing the construction and maintenance of septic tanks and sanitary privies were developed. Personnel were assigned to conduct sanitation surveys and educational campaigns, enforce the sanitary laws where necessary, and supervise the construction of septic tanks and sanitary privies. Thus the foundation was laid for the future nation-wide privy construction program undertaken to protect the public health and give employment to relief labor.

In December, 1933, the Civil Works Administration was established to relieve unemployment. The U. S. Public Health Service recognized in this program an opportunity to improve rural sanitation work, and secured an allotment of CWA funds for the construction of sanitary privies. This was the beginning of the "millennium" for the men who had spent years in promoting construction of sanitary privies through education, exhortation, persuasion, and

enforcement of sanitary laws. The CWA furnished the necessary labor, and property owners provided the materials. Technical supervision of the community sanitation projects was provided by the Public Health Service through personnel assigned to the state health departments. This program, although of short duration, demonstrated that the construction of sanitary privies was a desirable work-relief project in the field of public health. Similar community sanitation projects were continued under the Federal Emergency Relief Administration and the Work Projects Administration.

Observation of privies constructed prior to the inception of the federal work-relief program revealed that practically all pit privies had wood floors and risers which rapidly decayed and were difficult to keep clean. Recognizing the need for a more permanent type of construction, the Public Health Service developed a concrete slab and riser type of privy. A majority of state health departments either adopted this design or developed a similar type of concrete slab and riser earth pit privy. After observing advantages afforded by concrete slabs and risers a number of states made this type of construction mandatory. About 90 per cent of the privies constructed during the fiscal year 1939 under the Community Sanitation Program were of this type.

During the period from December, 1933, through June, 1942, 2,911,323 sanitary privies were constructed in 38 states and in Puerto Rico through the coöperative effort of the CWA, FERA, WPA, state health departments, and the U. S. Public Health Service.

To appreciate the magnitude of the Community Sanitation Program conducted by the work-relief agencies during the last 10 years it is only necessary to indicate the materials required and the funds involved in the construction of nearly three million privies. The

amounts of materials used were roughly as follows:

Lumber	1,000,000,000 bd. ft.
Cement	6,000,000 bags
Sand and gravel	1,000,000 cu. yds.
Reinforcing steel	12,000 tons
Roofing	110,000,000 sq. ft.
Nails	24,000,000 lbs.
Hinges	6,000,000 pairs

It is assumed that the average costs of material and labor were \$15 and \$20 respectively, and that supervisory costs were 5 per cent. On this basis it is estimated that the sum of \$110,000,000 was expended for the construction of sanitary privies under the various work-relief programs. Of this amount, approximately \$45,000,000 was provided for materials by the property owners concerned.

What benefits, in addition to affording employment to an estimated average force of about 15,000 men, accrued from this sizeable expenditure? Concurrently with the Community Sanitation Program remarkable progress was made in the construction of municipal water and sewerage systems, in milk sanitation, and in other aspects of environmental sanitation through the federal grants-in-aid system designed to further public health activities. Therefore, it is impossible to claim for any one activity a predominant rôle in the reduction of intestinal diseases. Nevertheless, in states such as West Virginia, Tennessee, North Carolina, and Mississippi, where the greatest number of sanitary privies were constructed, there were significant reductions in the incidence of typhoid fever, dysentery, and other intestinal diseases. In view of the large number of persons employed on the projects and the fact that in "selling" 3,000,000 privies it was necessary to explain to at least 15,000,000 persons the reasons why sanitary excreta disposal was essential to protect the public health, it cannot be doubted that the Community Sanitation Pro-

gram contributed significantly to public understanding of the importance of this phase of environmental sanitation.

Further impetus to the sanitation of rural areas was provided by the Farm Security Administration, whose public health program was organized and directed by officers of the Public Health Service. The FSA realized that farmers ill with typhoid fever, dysentery, or malaria could not maintain adequate farm production or repay crop loans. Therefore, a farm sanitation program was organized, the basic elements of which involved provision of sanitary privies, safe domestic water systems, and screening of homes. Under this program approximately 92,000 sanitary privies were installed, 45,000 domestic water supplies were protected, and 58,000 homes were screened. Work was carried on in all 48 states, and, since the FSA assisted farmers whose financial resources were extremely meager, the work was done on properties where it was most needed and where sanitation paid the greatest dividends. Many of the farms on which improvements were made had previously lacked privies of any kind. State and local health departments participated in the FSA program, and their policies were adhered to and respected by the federal agency.

During the present emergency state and local health agencies are in a much better position with regard to extracantonment sanitation than they were during the first World War. Sanitation personnel have been recruited and trained by the Public Health Service and have been assigned to the states to assist in maintaining and improving environmental sanitation in war areas.

Although outstanding progress has been made in the construction of sanitary privies, much remains to be done in providing sanitary excreta disposal facilities where water carriage sewerage systems are impracticable. Reconnaissance

sance surveys made by the Public Health Service indicate that about 165,000 additional sanitary privies are needed in the war areas. Thus it is apparent that privy construction is an important part of the present extracantonment sanitation program. The 1940 census revealed that there are 14,778,360 rural homes in the United States. Of these, 9,631,762 are served by outside toilets and 907,923 have no toilet facilities. The 3,000,000 privies constructed under the work-relief programs, and 50 per cent of the remainder of the privies serving rural homes, or a total of about 6,300,000, now are assumed to be reasonably satisfactory. On this basis it is conservatively estimated that more than 4,000,000 additional sanitary privies are needed in this country. The construction of these basic sanitary facilities should be included in any post-war public works program which may be instituted to relieve unemployment. In any event, after the present emergency, state and local health departments should assign sufficient personnel to rural sanitation activities to conduct educational campaigns, to secure the enactment and enforcement of adequate sanitation ordinances, and to provide sanitary excreta disposal facilities for about 16,000,000 people now without these fundamental necessities.

The sanitary privy has a definite relationship to public health and in this

connection the following points are significant:

1. In areas where water carriage sewerage systems are impracticable the privy is the facility relied upon to break the transmission chain of intestinal diseases.

2. Privy construction programs, originally undertaken in the hookworm and typhoid fever regions in the South thirty years ago, contributed substantially to the early development of full-time local health services. At present more than 1,800 counties in the United States have such services.

3. The 3,000,000 sanitary privies constructed under the various work-relief programs have had an important effect in reducing the incidence of intestinal diseases.

4. The close association of U. S. Public Health Service officials with state health departments in rural sanitation campaigns over a period of 30 years has been instrumental in developing the *esprit de corps* which now enables local, state, and federal health services to cope successfully with problems of sanitation, malaria, venereal disease, and industrial hygiene in critical war areas in America today.

5. The fundamental principles of federal-state coöperation, successfully demonstrated in the rural sanitation programs, are now being applied throughout the field of public health. In addition, coöperative plans for public health work among selected population groups have been developed by the Public Health Service with other federal agencies. The Farm Security Administration's health and sanitation program is an example of federal coöperative health work.

6. Approximately 4,000,000 additional sanitary privies are needed to serve about 16,000,000 persons now without sanitary excreta disposal facilities, who for the most part reside in areas having the highest incidence of typhoid fever, dysentery, and hookworm.